

FORM PTO-1390 (Modified) REV 11-2000		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER 218071US6PCT	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 10/030119	
INTERNATIONAL APPLICATION NO. PCT/GB00/02705		INTERNATIONAL FILING DATE 19 July 2000		PRIORITY DATE CLAIMED 24 July 1999 (earliest)	
TITLE OF INVENTION TEE CONNECTION TO A PIPELINE					
APPLICANT(S) FOR DO/EO/US JOHNSON Leigh Martin et al.					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
<ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below. 4. <input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31). 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371 (c) (2)) <ol style="list-style-type: none"> a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau). b. <input checked="" type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)). <ol style="list-style-type: none"> a. <input type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4). 7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3)) <ol style="list-style-type: none"> a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input checked="" type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)). 10. <input type="checkbox"/> An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)). 11. <input checked="" type="checkbox"/> A copy of the International Preliminary Examination Report (PCT/IPEA/409). 12. <input checked="" type="checkbox"/> A copy of the International Search Report (PCT/ISA/210). 					
Items 13 to 20 below concern document(s) or information included:					
<ol style="list-style-type: none"> 13. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 14. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 15. <input checked="" type="checkbox"/> A FIRST preliminary amendment. 16. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 17. <input type="checkbox"/> A substitute specification. 18. <input type="checkbox"/> A change of power of attorney and/or address letter. 19. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825. 20. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4). 21. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4). 22. <input type="checkbox"/> Certificate of Mailing by Express Mail 23. <input checked="" type="checkbox"/> Other items or information: PCT/IB/304/ Form PTO-1449 PCT/IB/308/Notice of Priority 					

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.53) 107030119		INTERNATIONAL APPLICATION NO. PCT/GB00/02705		ATTORNEY'S DOCKET NUMBER 218071US6PCT	
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24. The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) : <input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1040.00 <input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$890.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00				CALCULATIONS PTO USE ONLY <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">\$890.00</td> <td style="width:50%;"></td> </tr> <tr> <td>\$130.00</td> <td></td> </tr> </table>		\$890.00		\$130.00	
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ENTER APPROPRIATE BASIC FEE AMOUNT =									
Surecharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492 (c)). <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30				<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">\$130.00</td> <td style="width:50%;"></td> </tr> </table>		\$130.00			
\$130.00									
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE						
Total claims	15 - 20 =	0	x \$18.00	\$0.00					
Independent claims	1 - 3 =	0	x \$84.00	\$0.00					
Multiple Dependent Claims (check if applicable). <input type="checkbox"/>				\$0.00					
TOTAL OF ABOVE CALCULATIONS =				\$1,020.00					
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$0.00					
SUBTOTAL =				\$1,020.00					
Processing fee of \$130.00 for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.492 (f)). <input type="checkbox"/> 20 <input type="checkbox"/> 30 +				\$0.00					
TOTAL NATIONAL FEE =				\$1,020.00					
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input type="checkbox"/>				\$0.00					
TOTAL FEES ENCLOSED =				\$1,020.00					
				Amount to be refunded	\$				
				charged	\$				

a. <input checked="" type="checkbox"/> A check in the amount of \$1,020.00 to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 15-0030 . A duplicate copy of this sheet is enclosed. d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.	NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status. SEND ALL CORRESPONDENCE TO:
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Surinder Sachar
Registration No. 34,423

22850

SIGNATURE

Gregory J. Maier

NAME

25,599

REGISTRATION NUMBER

Jan 24 2002

DATE

10030119302

107030119302
531 Rec'd PCT/ 24 JAN 2002

Docket No. 218071US6PCT
 IN RE APPLICATION OF: Leigh Martin JOHNSON et al.
 SERIAL NO: New U.S. PCT Application (Based on PCT/GB00/02705)
 FILED: HEREWITH
 FOR: TEE CONNECTION TO A PIPELINE

ASSISTANT COMMISSIONER FOR PATENTS
 WASHINGTON, D.C. 20231

SIR:

Transmitted herewith is an amendment in the above-identified application.

- ☒ No additional fee is required
☐ Small entity status of this application under 37 C.F.R. §1.9 and §1.27 is claimed.
☒ Additional documents filed herewith: PCT Transmittal Letter/Notice of Priority/PCT/IB/304/Form PTO-1449
 International Preliminary Examination Report/International Search Report
 PCT/IB/308/Information Disclosure Statement/Check for \$1,020.00

The Fee has been calculated as shown below:

The Fee has been calculated as shown below:							
CLAIMS	CLAIMS REMAINING		HIGHEST NUMBER PREVIOUSLY PAID	NO. EXTRA CLAIMS	RATE	CALCULATIONS	
TOTAL	15	MINUS	20	0	× \$18 =	\$0.00	
INDEPENDENT	1	MINUS	3	0	× \$84 =	\$0.00	
		<input type="checkbox"/> MULTIPLE DEPENDENT CLAIMS			+ \$280 =	\$0.00	
		TOTAL OF ABOVE CALCULATIONS					\$0.00
		<input type="checkbox"/> Reduction by 50% for filing by Small Entity					\$0.00
		<input type="checkbox"/> Recordation of Assignment			+ \$40 =	\$0.00	
		TOTAL					\$0.00

- ☐ A check in the amount of \$0.00 is attached.
☒ Please charge any additional Fees for the papers being filed herewith and for which no check is enclosed herewith, or credit any overpayment to deposit Account No. 15-0030. A duplicate copy of this sheet is enclosed.
☒ If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time may be charged to Deposit Account No. 15-0030. A duplicate copy of this sheet is enclosed.

OBLON, SPIVAK, McCLELLAND,
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10030119 107030119

531 Rec'd PCT

24 JAN 2002

218071US-6 PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF:

:

LEIGH M. JOHNSON ET AL

: ATTN: APPLICATION DIVISION

SERIAL NO: NEW U.S. PCT APPLICATION :
(BASED ON PCT/GB00/02705)

FILED: HEREWITH

:

FOR: TEE CONNECTION TO A PIPELINE

PRELIMINARY AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Prior to a first examination on the merits, please amend the above-identified application as follows:

IN THE CLAIMS

Please cancel Claim 16 without prejudice.

Please amend the claims as follows:

3. (Amended) A method as claimed in claim 1, wherein the annular seal is made of rubber or of a polymer and metal composite.

4. (Amended) A method as claimed in claim 1, wherein the grout is injected into the annular space between the first and second parts and the external surface of the pipeline.

5. (Amended) A method as claimed in claim 1, wherein jacking means are employed to space the first part from the pipeline when the first and second parts have been secured together on the pipeline.

6. (Amended) A method as claimed in claim 5, in which the jacking means is hydraulically operated.

9. (Amended) A method as claimed in claim 7, in which when the jacking members are in position spacing the first part from the pipeline, stop means are fixed in position with respect to the first part to prevent the jacking members moving away from the pipeline.

10. (Amended) A method as claimed in claim 7, in which the pressure-applying means are removably mounted with respect to the first part, and the stop means are adapted to occupy the positions occupied by the pressure-applying means when the latter are removed.

12. (Amended) A method as claimed in claim 7, in which one or more load bearing members are positioned between the pipeline and the jacking members to spread the applied load when the jacking members are in position spacing the first part from the pipeline.

IN THE ABSTRACT

Please add the following new Abstract on a separate sheet:

ABSTRACT

A method for securing a branch assembly to a "live" pipeline. An upper part of the assembly incorporating the branch is positioned on the pipeline over a containment ring located on the pipeline and within which is an annular seal surrounding an area from which the branch is to extend. A lower part of the assembly is positioned on the pipeline beneath the upper part and the two parts are secured together so that the seal is compressed and an annular space is left between the two parts and the external surface of the pipeline. Grout is injected into the annular space and cures to bond the two parts forming the branch assembly in position on the pipeline. The use of grout avoids having to use welding techniques on a "live" pipeline. A coupon can be cut out of the pipeline, via the access through the branch.

REMARKS

Favorable consideration of this application, as presently amended, is respectfully requested.

The present preliminary amendment is submitted to place the above-identified application in more proper format under United States practice.

By the present preliminary amendment the claims have been amended to delete the improper multiple dependencies. Further, Claim 16 has been canceled by the present response.

An Abstract is also submitted herein.

The present application is believed to be in condition for a full and thorough examination on the merits. An early and favorable consideration of the present application is hereby respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



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218071US-6 PCT

Marked-Up Copy Serial No: _____ Amendment Filed on: <u>1-24-2002</u>
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IN THE CLAIMS

--3. (Amended) A method as claimed in claim 1 [or 2], wherein the annular seal is made of rubber or of a polymer and metal composite.

4. (Amended) A method as claimed in [any of the preceding claims] claim 1, wherein the grout is injected into the annular space between the first and second parts and the external surface of the pipeline.

5. (Amended) A method as claimed in [any of the preceding claims] claim 1, wherein jacking means are employed to space the first part from the pipeline when the first and second parts have been secured together on the pipeline.

6. (Amended) A method as claimed in claim [6] 5, in which the jacking means is hydraulically operated.

9. (Amended) A method as claimed in claim 7 [or 8], in which when the jacking members are in position spacing the first part from the pipeline, stop means are fixed in position with respect to the first part to prevent the jacking members moving away from the pipeline.

10. (Amended) A method as claimed in claim 7, [8 or 9,] in which the pressure-applying means are removably mounted with respect to the first part, and the stop means are

adapted to occupy the positions occupied by the pressure-applying means when the latter are removed.

12. (Amended) A method as claimed in [any of claims 7 to 11] claim 7, in which one or more load bearing members are positioned between the pipeline and the jacking members to spread the applied load when the jacking members are in position spacing the first part from the pipeline.

Claim 16 (Canceled).

IN THE ABSTRACT

(New).--

TEE CONNECTION TO A PIPELINE

The present invention relates to tee or branch connections to a pipeline and, more particularly, to a method of connecting tee or branch assemblies to pipelines such as gas or water mains.

An existing technique for repairing damaged steel pipelines uses basically two half-shells which are secured together to form a shell assembly which encircles the pipeline leaving an annulus between the pipeline and the shell assembly which is filled with grout that bonds the shell assembly to the pipeline wall. The epoxy grout thus fills and surrounds the damaged region and supports the damaged pipeline wall.

An object of the present invention is to provide a method of securing tee or branch connections to pipelines.

According to the invention, a method is provided for securing a branch assembly to a pipeline, wherein the branch assembly comprises a first part for locating on the side of the pipeline remote from the side from which the branch is to extend, and a second part incorporating the branch, the method comprising positioning a containment ring on the pipeline at the required position on the pipeline and surrounding the area from which the branch is to extend, positioning an annular seal on the pipeline so that the seal is wholly radially within the containment ring, positioning

the second part of the branch assembly onto the seal, positioning the first part of the assembly on the pipeline and securing the first and second parts together so as to compress the seal and leave an annular space between the first and second parts and the external surface of the pipeline, providing sealing means for substantially preventing grout from escaping from the annular space, and introducing into the annular space grout that cures to bond the branch assembly in position on the pipeline.

It will be appreciated that subsequent to the branch assembly becoming bonded to the pipeline, a known procedure can be executed for cutting a coupon out of the pipeline via access through the branch under "live" conditions of the pipeline.

It will also be appreciated that the annular seal must be sufficiently compressible, and also sufficiently robust to withstand and contain with the containment ring line pressure during operation of the pipeline over the working pressures.

The grout may, for example, be selected from the following range:

urethanes, polyesters, acrylics, epoxies and cementitious compounds. It will be appreciated that each should be selected to satisfy the operating temperature, humidity and curing rate which then leads to the different adhesion

strengths for different applications. Different grout material provides a different exothermic reaction which will determine the volume change after installation. It will also be understood that the volume change of epoxy grout should be optimized to minimize the internal stress system within the grout.

In order to ensure there is a good key for the grout, the external surface of pipeline and the inner surface of the first and second parts of the branch assembly may be dressed up or grit blasted prior to the assembly being mounted on the pipeline.

Conveniently, jacking means are employed to space the first part from the pipeline when the first and second parts have been secured together on the pipeline.

The jacking means may be hydraulically operated. For example, the jacking means may comprise a plurality of jacking members slidably mounted in apertures in the first part and pressure-applying means mounted with respect to the first part and behind the jacking members and being urged under hydraulic pressure against the jacking members to cause the jacking members to be urged towards the pipeline to positions to space the first part from the pipeline.

Conveniently, the jacking members are slidably mounted in bosses or the like secured or fixed to the first part, in

which case the pressure-applying members are also slidably mounted in the bosses or the like.

When the jacking members are in position spacing the first part from the pipeline, stop means are fixed in position with respect to the first part to prevent the jacking members moving away from the pipeline.

Advantageously, the pressure-applying means are removably mounted with respect to the first part, and the stop means are adapted to occupy the positions occupied by the pressure-applying means when the latter are removed.

The stop means may be screwed into position in threaded supporting members fixed to the first part.

Conveniently, one or more load bearing members are positioned between the pipeline and the jacking members to spread the applied load when the jacking members are in position spacing the first part from the pipeline.

The load bearing members may be in the form of enlarged feet on the jacking members, the surfaces of which feet may

generally correspond to the profile of the pipeline. Alternatively, the load bearing members may be secured to the pipeline, in positions so that they will be engaged or contacted by the jacking members.

The invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 shows schematically the top and bottom parts of a branch assembly to be used in a method according to the invention;

Figure 2 is a schematic plan view of a pipeline on which is positioned a containment ring and an annular sealing ring in preparation of the pipeline receiving the top part of the branch assembly;

Figure 3 is a schematic side view of the pipeline on which the top and bottom parts of the branch assembly have been secured together in position;

Figure 4 is a schematic view in the direction of arrow A in Figure 3;

Figure 5 is a similar view to that shown in Figure 4 but of a modified arrangement in which the jacking means is hydraulically operated; and

Figure 6 is a view similar to Figure 5 but showing stop means occupying the positions previously occupied by the pressure-applying means, as in Figure 5.

With reference to Figure 1, there is shown a branch assembly 1 comprising a first part 2 forming the upper part of the assembly and a second part 3 forming the lower part.

The upper part and lower parts of the assembly 1 are made of carbon steel and have generally part cylindrical portions 4 and 5, respectively, which are securable together about a pipeline 6 via flanges 7 and 8 which extend longitudinally along each side of the upper and lower parts, as can be clearly seen in Figure 3.

The flanges 7 of the upper part 2 have apertures 9 which are intended to align with apertures 10 in the flanges 8 of the lower part 3 so that securing bolts 11 (see Figures 3 and 4) can be passed therethrough to secure the two parts 2 and 3 together on the pipeline.

The upper cylindrical portion 4 includes an apertured section 12 from which extends a short branch pipe 13 terminating in an annular flange 14 to which a branch pipeline having an end flange can be connected in a known fashion (not shown) after the assembly 1 is securely bonded to the pipeline 6.

By way of illustration of the invention, a method of securing the tee assembly 1 to a steel pipeline is described below.

Initially, the area of the external surface of the pipeline to which the branch assembly is to be secured is grit blasted (not shown), as are the inner surfaces of the part-cylindrical portions 4 and 5 of the upper and lower parts of the branch assembly.

A containment ring 16 made of steel and shaped so as to conform to the shape of the pipeline is positioned on the pipeline around the area 6a from which the branch pipe 13 of the branch is to extend.

An annular seal 17 made for example of rubber or polymer and metal and of greater thickness than the containment ring 16 is then placed within the containment ring so as substantially to conform to the shape of the pipeline 6 (see Figure 2).

The upper part 2 of the branch assembly is lowered onto the seal 17, with the bore 13a of the branch pipe 13 being centralised with the area 6a surrounded by the seal and containment ring, the lower part 3 is moved into position on the pipeline, and the upper and lower parts 2 and 3 of the assembly are secured together by means of bolts 11 used in association with the aligned apertures 9 and 10 in the flanges 7 and 8 (see Figures 3 and 4).

Jacking bolts 18 are mounted in the wall of the lower part 3 of the branch assembly. These jacking bolts extend through the wall of the lower part to engage or bear on the surface of the pipeline 6, and can be turned from the outside of the assembly to be loosened or tightened against the wall of the pipeline. The jacking bolts 18 are adjusted so that the annular seal 17 is sufficiently compressed to provide a suitable seal prior to the introduction of epoxy grout.

Once the tee assembly 1 is in position on the pipeline, a generally cylindrical or annular space or gap 19 is left or defined between the upper and lower parts 2 and 3 and the external surface of the pipeline 6.

The annular space is bounded by sealing means 20, such as suitable putty which is located between the branch assembly and the pipeline at the opposite ends of the assembly, and by the annular seal 17.

The grout is then injected into the annular space 19 via injection opening 21, located towards the bottom of the lower part of the assembly, to fill the annular space. An outlet opening 22 for expressed air and excess injected grout is provided in the upper part of the assembly. After the annular space 19 is filled with grout, the grout is allowed to cure and thereby bond the upper and lower parts 2 and 3, and thus the branch assembly 1, to the pipeline.

When the assembly is securely bonded by the grout to the pipeline, the jacking bolts 18 can be, optionally, loosened off to ensure load is fairly or more evenly distributed on the pipeline by the grout.

In Figures 5 and 6 an alternative method of jacking is illustrated. The lower part 3 is provided with apertures 23 in which are slidably mounted jacking members 24 each carrying enlarged feet 25 which match the profile of the pipeline and are for engaging or contacting the surface of the pipeline. Bosses 26 having through bores 27 are secured to the lower part 3. The through bores 27 are for slidably receiving the free, outer ends of the jacking members 24. Hydraulically operated means 28 comprising cylinder means 29 are mounted on the bosses 26. Each cylinder means 29 comprises a cylinder 30 and a pressure-applying means 31 in the form of a piston is slidably mounted in the cylinder 30. The cylinders 30 are aligned with respective ones of the bores 27 of the bosses 26. The pistons are also slidably mounted in the bores 27 of the bosses 26. Hydraulic pressure is applied through lines 32, 33, 34 to the respective cylinders 30 from a common main line 35 to a source 36 of hydraulic pressure. On applying appropriate hydraulic pressure to the cylinders 30 the pistons 3 are urged against the jacking members 24 to cause the jacking members to be urged towards and against the pipeline 6 such

that the annular seal 17 is compressed and a generally annular space or gap 19 is formed as described earlier.

The enlarged feet 25 serve as load bearing members that spread the load applied to the pipeline via the jacking members.

After the grout has been injected into the annular space 19 and allowed to cure, as described above, the cylinder means 29, including the pistons, are removed from the bosses 26 and stops 37 (see Figure 6) are inserted into the bosses and fixed in position therein butting up against the back ends of the jacking members, thereby occupying the positions previously occupied by the pistons, to prevent the jacking members moving away from the pipeline. The stops 37 may be externally threaded as at 37a and screwed into bosses 26 which are correspondingly internally threaded as at 26a. The provision of the fixed stops 37 removes reliance on the continued integrity of the cured grout behind the enlarged feet to prevent unwanted movement of the jacking members 24 away from the pipeline. Thus, if the cured grout behind the enlarged feet 25 should deteriorate and disintegrate or "fail", the stops 37 hold the pipeline in position relative to the shell assembly.

In a modification (not shown) the enlarged feet on the jacking members may be replaced by load bearing members

secured to the pipeline in positions so that they will be engaged or contacted by the jacking members.

With the branch assembly securely bonded to the pipeline, known "live" procedures can be performed for cutting out a coupon from area 6a of the pipeline (not shown) and joining a branch pipeline (not shown) to the branch utilising the branch pipe 13. Such known procedures will not be described here.

A method according to the invention, examples of which are described above, enables a branch assembly to be bonded to a pipeline without having to employ welding techniques. This is a particular advantage where "live" pipelines are involved, especially where there are high product flow rates through the pipeline. Other advantages of using such a method include minimising unnecessary pressure reduction in the pipeline and enabling cost savings for installations.

CLAIMS

1. A method for securing a branch assembly to a pipeline, wherein the branch assembly comprises a first part for locating on the side of the pipeline remote from the side from which the branch is to extend, and a second part incorporating the branch, the method comprising positioning a containment ring on the pipeline at the required position on the pipeline and surrounding the area from which the branch is to extend, positioning an annular seal on the pipeline so that the seal is wholly radially within the containment ring, positioning the second part of the branch assembly onto the seal, positioning the first part of the assembly on the pipe line and securing the first and second parts together so as to compress the seal and leave an annular space between the first and second parts and the external surface of the pipeline, providing sealing means for substantially preventing grout from escaping from the annular space, and introducing into the annular space grout that cures to bond the branch assembly in position on the pipeline.
2. A method as claimed in claim 1, wherein the first part forms the lower part of the assembly and the second part forms the upper part of the assembly.

3. A method as claimed in claim 1 or 2, wherein the annular seal is made of rubber or of a polymer and metal composite.
4. A method as claimed in any of the preceding claims, wherein the grout is injected into the annular space between the first and second parts and the external surface of the pipeline.
5. A method as claimed in any of the preceding claims, wherein jacking means are employed to space the first part from the pipeline when the first and second parts have been secured together on the pipeline.
6. A method as claimed in claim 6, in which the jacking means is hydraulically operated.
7. A method as claimed in claim 6, in which the jacking means comprises a plurality of jacking members slidably mounted in apertures in the first part and pressure-applying means mounted with respect to the first part and behind the jacking members and being urged under hydraulic pressure against the jacking members to cause the jacking members to be urged towards the pipeline to positions to space the first part from the pipeline.

8. A method as claimed in claim 7, in which the jacking members are slidably mounted in bosses or the like secured or fixed to the first part, and the pressure-applying members are also slidably mounted in the bosses or the like.
9. A method as claimed in claim 7 or 8, in which when the jacking members are in position spacing the first part from the pipeline, stop means are fixed in position with respect to the first part to prevent the jacking members moving away from the pipeline.
10. A method as claimed in claim 7, 8 or 9, in which the pressure-applying means are removably mounted with respect to the first part, and the stop means are adapted to occupy the positions occupied by the pressure-applying means when the latter are removed.
11. A method as claimed in claim 10, in which the stop means are screwed into position in threaded supporting members fixed to the first part.
12. A method as claimed in any of claims 7 to 11, in which one or more load bearing members are positioned between the pipeline and the jacking members to spread the applied load when the jacking members are in position spacing the first part from the pipeline.

13. A method as claimed in claim 12, in which the load bearing members are in the form of enlarged feet on the jacking members.
14. A method as claimed in claim 13, in which the surfaces of the feet generally correspond to the profile of the pipeline.
15. A method as claimed in claim 12, in which the load bearing members are secured to the pipeline in positions so that they will be engaged or contacted by the jacking members.
16. A method as claimed in claim 1 and substantially as hereinbefore described with reference to Figures 1 to 4, or Figures 1 to 4 as modified by Figures 5 and 6, of the accompanying drawings.

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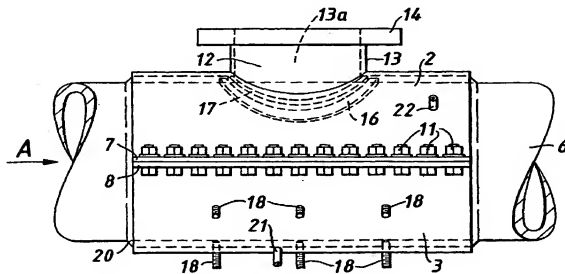
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: TEE CONNECTION TO A PIPELINE



(57) Abstract: A method is provided for securing a branch assembly (1) to a "live" pipeline (6). An upper part (2) of the assembly incorporating the branch (13) is positioned on the pipeline over a containment ring (16) located on the pipeline and within which there is an annular seal (17) surrounding an area (6a) from which the branch is to extend. A lower part (3) of the assembly is positioned on the pipeline beneath the upper part and the two parts are secured together so that the seal is compressed and an annular space (19) is left between the two parts and the external surface of the pipeline. Grout is injected into the annular space (19) and cures to bond the two parts forming the branch assembly in position on the pipeline. The use of grout avoids having to use welding techniques on a "live" pipeline. A coupon can be cut out of the pipeline, via the access through the branch.

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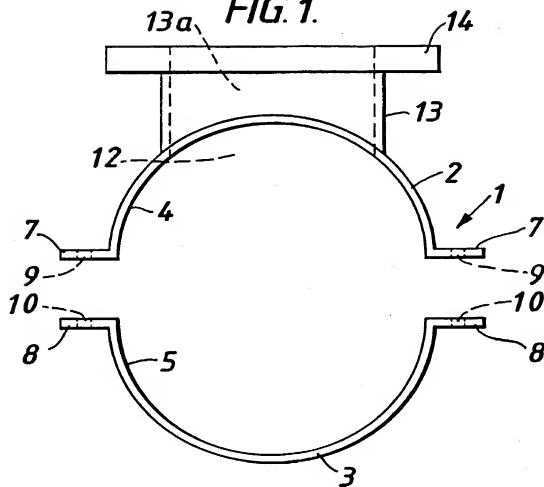
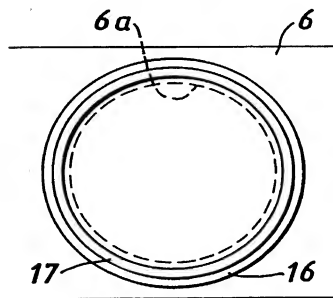
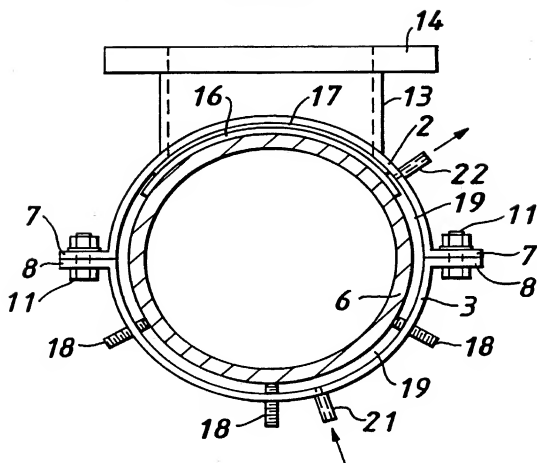
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FIG. 1.

FIG. 2.



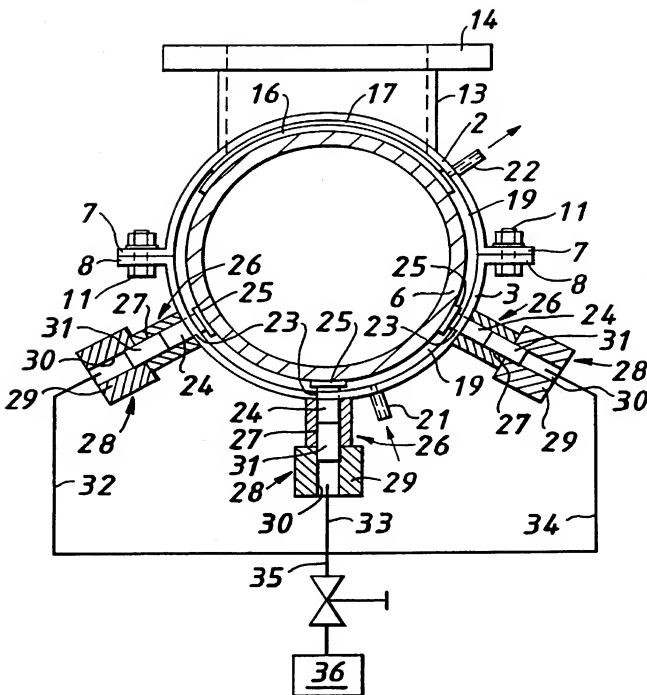
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FIG. 4.



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FIG. 5.



Declaration, Power of Attorney and Petition

Page 1 of 3

WE (I) the undersigned inventor(s), hereby declare(s) that:

My residence, post office address and citizenship are as stated below next to my name,

We (I) believe that we are (I am) the original, first, and joint (sole) inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Tee Connection to a Pipeline

the specification of which

- ☐ is attached hereto.
- ☐ was filed on _____ as
Application Serial No. _____
and amended on _____
- ☒ was filed as PCT international application
Number PCT/GB00/02705
on 19 July 2000
and was amended under PCT Article 19
on _____ (if applicable).

We (I) hereby state that we (I) have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

We (I) acknowledge the duty to disclose information material to the examination of this application in accordance with Section 1.56(a) of Title 37 Code of Federal Regulations.

We (I) hereby claim foreign priority benefits under 35 U.S.C. of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Application No.	Country	Day/Month/Year	Priority Claimed
9917360.1	Great Britain	24 July 1999	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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Page 2 of 3
Declaration.

We (I) hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

(Application Number)

(Filing Date)

(Application Number)

(Filing Date)

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Filing Date

Status (pending, patented,
abandoned)

PCT/GB00/02705

19 July 2000

And we (I) hereby appoint Norman F. Oblon, Registration Number 24,618; Marvin J. Spivak, Registration Number 24,913; C. Irvin McClelland, Registration Number 21,124; Gregory J. Maier, Registration Number 25,599; Arthur T. Neustadt, Registration Number 24,854; Richard D. Kelly, Registration Number 27,757; James D. Hamilton, Registration Number 28,421; Eckhard H. Kuesters, Registration Number 28,870; Robert T. Pous, Registration Number 29,099; Charles L. Gholz, Registration Number 26,395; Vincent J. Sunderdick, Registration Number 29,004; William E. Beaumont, Registration Number 30,996; Steven B. Kelber, Registration Number 30,073; Robert F. Gnuse, Registration Number 27,295; Jean-Paul Lavalleye, Registration Number 31,451; Timothy R. Schwartz, Registration Number 32,171; Stephen G. Baxter, Registration Number 32,884; Martin M. Zoltick, Registration Number 35,745; Robert W. Hahl, Registration Number 33,893; Richard L. Treanor, Registration Number 36,379; Steven P. Weihrouch, Registration Number 32,829; John T. Goolkasian, Registration Number 26,142; Marc R. Labgold, Registration Number 34,651; William J. Healey, Registration Number 36,160; Richard L. Chinn, Registration Number 34,305; Steven E. Lipman, Registration Number 30,011; Carl E. Schlier, Registration Number 34,426; James J. Kulbaski, Registration Number 34,648; Catherine B. Richardson, Registration Number 39,007; Richard A. Neifeld, Registration Number 35,299; J. Derek Mason, Registration Number 35,270 and Jacques M. Dulin, Registration Number 24,067; our (my) attorneys, with full powers of substitution and revocation, to prosecute this application and to transact all business in the Patent Office connected therewith; and we

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16-01-02
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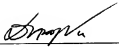
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28 JANUARY 2002
Date